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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09-514,043	03/24/2000	Toshiaki Shimohara	0057-2608-2YY	3123

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EXAMINER

CHU, CHRIS C

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 04/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/534,043

Applicant(s)

SHINOHARA ET AL.

Examiner

Chris C. Chu

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133)
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b)

Status

- 1) ☒ Responsive to communication(s) filed on 05 February 2003
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213

Disposition of Claims

- 4) ☒ Claim(s) 1, 3 - 8, 13 and 14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration
- 5) ☒ Claim(s) 7, 13 and 14 is/are allowed.
- 6) ☒ Claim(s) 1, 4, 6 and 8 is/are rejected.
- 7) ☒ Claim(s) 3 and 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement

Application Papers

- 9) ☐ The specification is objected to by the Examiner
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved or b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1 ☒ Certified copies of the priority documents have been received.
- 2 ☐ Certified copies of the priority documents have been received in Application No. _____
- 3 ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application)
- a) ☐ The translation of the foreign language provisional application has been received
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other

DETAILED ACTION

Continued Prosecution Application

1. The request filed on February 5, 2003 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09, 534, 043 is acceptable and a CPA has been established. An action on the CPA follows.
2. The applicant's amendments filed on December 17, 2002 and February 5, 2003 have been received and entered in this office action.

Double Patenting

3. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

4. Claim 6 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 4. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 4 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Berg.

Regarding claim 1, Berg discloses in Fig. 1, Fig. 2, Fig. 5 and column 6, lines 11 ~ 19 a semiconductor module mountable on an external heat sink (112), the semiconductor module comprising:

- an insulating substrate (10, 62 and a structure between wire and 10) for the semiconductor module, the insulating substrate (10, 62 and a structure between wire and 10) including a substrate (10), a first conductive pattern (a structure between wire and 10) formed on a first main surface of the substrate which is on the opposite side from the external heat sink, and a second conductive pattern (62) formed on a second

- main surface of the substrate which is on the same side as the external heat sink and for contact with the external heat sink; and
- a mounting frame (34 and 42) made of metal and having a mounting surface for contact with the external heat sink, the mounting frame (34 and 42) including a flange along a periphery thereof for engagement with a peripheral part of the insulating substrate at the first main surface, the flange pressing the peripheral part of the insulating substrate toward the external heat sink,
 - wherein the mounting frame further includes:
 - a first metal plate (42) having the mounting surface, and
 - a second metal plate (34) disposed directly on and in contact with the first metal plate and having a protrusion along a periphery thereof projecting from a periphery of the first metal plate to define a flange.

As to the language on lines 10 ~ 12 of claim 1, the phrase "to force the insulating substrate into pressure contact with the external heat sink" is functional language which does not differentiate the claimed apparatus from Berg.

Regarding claim 4, Berg discloses in Fig. 5 the insulating substrate (10) further includes a third conductive pattern (a structure between 10 and 34) formed on the first main surface along a periphery of the substrate; and the flange and the insulating substrate contact each other, with the third conductive pattern therebetween.

Regarding claim 6, Berg discloses in Fig. 5 the insulating substrate (10) further includes a third conductive pattern (a structure between 10 and 34) formed on the first main surface along a

periphery of the substrate; and the flange and the insulating substrate contact each other, with the third conductive pattern therebetween.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirose et al. in view of Hiyoshi.

Hirose et al. discloses in Fig. 16B and column 10, lines 16 ~ 19 a semiconductor module mountable on an external heat sink (5), the semiconductor module comprising:

- an insulating substrate (1, 11, and 8) for the semiconductor module, the insulating substrate (1, 11, and 8) including a substrate (1), a first conductive pattern (8) formed on a first main surface of the substrate which is on the opposite side from the external heat sink, and a second conductive pattern (11) formed on a second main surface of the substrate which is on the same side as the external heat sink and for contact with the external heat sink;
- a mounting frame (3) made of metal and having a mounting surface for contact with the external heat sink, the mounting frame (3) including a flange along a periphery

thereof for engagement with a peripheral part of the insulating substrate at the first main surface, the flange pressing the peripheral part of the insulating substrate toward the external heat sink to force the insulating substrate into pressure contact with the external heat sink.

- wherein the substrate, the first conductive pattern and the second conductive pattern of the insulating substrate have respective peripheries in alignment with each other, and
- wherein the flange presses the periphery of the first conductive pattern on which a semiconductor element is mounted toward the external heat sink.

Hirose et al. does not disclose an insulative material between the flange and the first conductive pattern. However, Hiyoshi discloses in Fig. 4 an insulative material (53) between a flange (51) and a first conductive pattern. It would have been obvious to one of ordinary skill in the art at the time of the present invention was made to add the insulative material of Hiyoshi in the device of Hirose et al. in order to seal the semiconductor package as taught by Hiyoshi in column 11, lines 45 ~ 54.

Allowable Subject Matter

9. Claims 7, 13 and 14 are allowed (see previous office action).
10. Claims 3 and 5 are objected (see previous office action).

Response to Arguments

11. Applicant's arguments with respect to claims 1 and 8 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nagase et al. discloses a power module substrate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chris C. Chu whose telephone number is (703) 305-6194. The examiner can normally be reached on M-F (10:30 - 7:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7382 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Chris C. Chu
Examiner
Art Unit 2815

c.c.
April 14, 2003


SHEILA V. CLARK
PRIMARY EXAMINER